

REMARKS

In the Office Action mailed June 29, 2004, claims 1-17 are pending in the application. The Applicants respectfully request reconsideration of claims 1-17.

The specification is objected to as failing to provide proper antecedent basis for claims 6, 11, and 15. Applicants therefore amend paragraph [0030] of the Detailed Description, which therefore includes that the critical zone 15 for external airbag activation is illustrated with a rectangular region about 120 ms times the maximum allowable closing velocity of the target vehicle, or approximately three meters long, and as wide as the host vehicle in front of the host vehicle 3. This amendment provides an example of a critical zone in accordance with Applicants' original intent. The critical zone is an example of the region scanned by the visual sensor, as discussed in paragraph [0030]. Applicants have further amended claims 6, 11, and 15 to clarify that the visual sensor is sensing the region included in claims 6, 11, and 15. No new matter has been added.

Claims 1-5, 7-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuman et al (US 2003/0065432) in view of Tsutsumi et al. (US 5,617,085). Claims 6, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuman et al. (US 2003/0065432) in view of Tsutsumi et al (US 5,617,085) and further in view of Winner et al. (US 6,580,385). Claims 12, 14, 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuman et al (US 2003/0065432) in view of Tsutsumi et al (US 5,617,085) and further in view of Sato et al (US 3,778,823). Claim 15

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is rejected under 35 U.S.C. 103(a) as being unpatentable over Shuman et al (US 2003/0065432) in view of Tsutsumi et al (US 5,617,085) further in view of Sato et al (US 3,778,823) and Winner et al (US 6,580,385).

According to the Office Action, as per claim 1-2 and 7-9, Shuman teaches a crash assessment and safety activation system comprising: a first remote sensor 202(7) (fig.4) and a first visual sensor 202(5) (fig.4) (para 0064), a first safety device actuator to activate a first safety device, a controller 210, 230 (fig.2) for controlling a first safety device in response to the result concluded from the first remote and visual sensor (para 0069; 0086; 0154; 0166). The Office Action recognizes that Shuman does not explicitly suggest letting the visual sensor sense at least a portion of the region sensed by the remote sensor and generating confirmation signal. However, the Office Action asserts that since Shuman teaches providing images and distance of the objects sensed by the remote sensor (para 0154), Shuman therefore teaches that the visual sensor senses at least a portion of region sensed by the remote sensor.

Moreover, according to the Office Action, Shuman teaches using both data from the remote and visual sensor for confirming the existence as well as position and size of objects to determine activation of safety devices (para 0086, 0154), further, according to the Office Action, Tsutsumi teaches confirming the target object using both first object signal and visual signal (col.13, lines 40-64; col. 14, lines 3-7, lines 61-67; col. 13, lines 15-67; col. 16, lines 1-24).

Although Applicants believe the claims are not obvious in view of the prior art, Applicants nevertheless amend claims 1, 9, and 14 to include that the visual sensor is sensing an area relative to the critical zone of the vehicle from paragraph [0030] of the Detailed Description, which is not taught or suggested in the Shuman and Tsutsumi references. This sets a threshold for the sensing system such that a vehicle may be tracked by a remote sensor, but when it enters the critical distance, the visual sensor may instantly give a determination as to whether it is a vehicle or not. Therefore, because all the elements of claims 1, 9, and 14 are not taught or suggested in the prior art, these claims are believed to be allowable.

Claims 2-8, 10-13, and 15-17 depend from claims 1, 9, and 14 and are believed to be allowable for at least this reason.

As mentioned above, claims 6, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuman in view of Tsutsumi and further in view of Winner et al. (US 6,580,385). As per claims 6 and 11, according to the Office Action, Winner teaches a well known remote sensor capable of sensing a region of 3m (col.3, lines 5-10).

The Applicants submit that it would not have been obvious to combine the Shuman, Tsutsumi, and Winner references to arrive at the present invention. No reason is shown why one of ordinary skill in the art would modify the Shuman, Tsutsumi, or Winner references as the Office Action proposes. The references are not pertinent to the problem of eliminating false activation of safety devices through defining a critical zone, as claimed by the Applicants.

Claims 6 and 11 depend from the amended claims 1 and 9 and are believed to be allowable over Shuman, Tsutsumi, and Winner for at least this reason. Further, Shuman, Tsutsumi, and Winner are not directed towards, nor do they teach, defining an example of a critical zone as in claims 6 and 11. Shuman and Tsutsumi do not include sensors specifically sensing a zone near the host vehicle. Although Winner includes near vehicle sensors that may sense near vehicle data, these are included merely to provide complete coverage of the external of the vehicle, i.e. have as large a detection zone as possible. See Summary of the Invention. It is well known that more sensitive sensors will have a limited coverage range. However, what is not well known nor included in Winner is that a critical zone may be predetermined such that, when sensor data of an oncoming vehicle signals that the oncoming vehicle is almost within the critical zone, a vision sensor will, at the moment it crosses into the critical zone, verify that it is an oncoming vehicle. It is, among other things, the defining of the critical zone and the sensing of the vision sensor relative to the critical zone that is new and nonobvious.

Claims 12, 14, 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuman in view of Tsutsumi and further in view of Sato et al (US 3,778,823). As per claim 12, 14, 16, 17, according to the Office Action, Sato teaches determining whether a potential for collision is within a safety device activation threshold (col.6, lines 23-30; col.7, lines 1-13; col. 10, lines 32-61).

Claims 12, 14, 16, 17 are not obvious in view of Shuman, Tsutsumi, and Sato for at least the reasons discussed above. Further, Sato is directed to a conventional vehicle

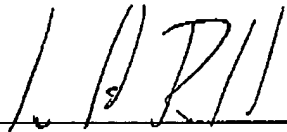
safety system, more importantly, Sato is not directed to the verification and analysis system of the present invention. Sato does not include, nor does it suggest, a visual sensor to verify that an oncoming object is a vehicle or other object. Instead, Sato makes determinations based merely on relative angle and relative speed of the oncoming object. Abstract. The "threshold" of Sato is subject at the same limitations as many prior art systems in that no verification is provided at the moment the object enters the critical zone. Resultantly, when responding to threshold information, safety devices of Sato may be improperly activated. The claimed invention eliminates this possibility by including a visual confirmation at the moment the object passes into the critical zone; and claims 12, 14, 16, 17 are believed to be allowable for at least this additional reason.

In view of the aforementioned remarks, it is respectfully submitted that all pending claims are in a condition for allowance. A notice of allowability is therefore respectfully solicited.

Please charge any fees required in the filing of this amendment to Deposit
Account 50-0476.

Respectfully submitted,

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